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Published by the contributors to advance the Science of cold-blooded vertebrates.

FURTHER NOTES ON THE SALIENTIA OF JACKSONVILLE, FLA.

Engystoma carolinense, Holbrook, the "Narrow-mouth Toad," is a common Batrachian here, but owing to its nocturnal habits, it is not often seen. After thunder-showers, however, every pool and ditch resounds with its cry, which sounds like a nasal "baa" or "bee" and has also some resemblance to the noise made by an electric buzzer. I have caught hundreds of these queer little toads, and on August 28, 1911, came across their spawn in a ditch between two potato hills. The eggs are laid in oblong, jelly-like sheets, or flat masses, about $1\frac{1}{2}$ inch long and 1 inch wide. The egg-masses contain about 100 to 150 eggs.

Below is what I believe to be the first record of the growth and metamorphosis of this species:

Eggs laid, night of August 27, 1911.

Aug. 28. One egg-mass put in flat enamelled pan in about $1\frac{1}{2}$ inch of water. Larvæ straightened out, but still in the egg-mass.

Aug. 30. Larvæ released from egg-mass, $\frac{1}{8}$ inch long, with small gill tufts.

Sept. 1. Larvæ $\frac{3}{16}$ inch long, gills disappearing.

Sept. 2. Larvæ $\frac{1}{4}$ inch long, all have lost gills.

Sept. 8. Hind legs budding, length of larvæ $\frac{1}{2}$ inch.

- Sept. 12. Legs fully developed, arms appearing, tail getting shorter, length of larvæ $\frac{5}{8}$ inch.
- Sept. 14. Larvæ breathing air, tail is but a short stump.
- Sept. 16. Tail gone, the young toads measure $\frac{3}{8}$ inch from snout to vent.

Bufo lentiginosus, Shaw, is the southern representative of our common (northern) toad, and seems to prefer the neighborhood of human habitations for its abode. Near our house we found them under boards, logs, tubs, heaps of rubbish, etc. Their habits are in every respect similar to those of *Bufo americanus*, and the call of the male cannot be distinguished from that of the northern species. The toad itself, however, is differently built, the head being wider and higher, and the arms and legs shorter and more delicate. The eyes, also, are larger, and the enormous bony knobs on the large heads of some of the old females give them a sort of resemblance to species of the tropical cystignathoid toads *Ceratophrys*. Unlike the latter, our toads are gentle creatures, living their life of usefulness in our farms and gardens.

Bufo quercicus, Holbrook, is, I believe, the smallest species of the whole genus *Bufo*, called the "Oak-toad," and very common around Jacksonville. Its cry resembles that of a small chick, very loud and shrill, and may be heard at any time of day or night, sometimes from absolutely dry and dusty fields and roadsides, where these tiny toads hop about in the glaring sunshine, living on the smallest of insects. The full chorus, which is ear-splitting, is, however, heard only at night, after heavy rains. The throat of the male is black, and when the pouch is distended, forms a small elongate bladder, slanting upward, and about $\frac{3}{4}$ inch long and $\frac{1}{4}$ inch in diameter. The spawn is laid in tiny strings, and the metamorphosis is very rapid. The

young toads, when fully developed, are $\frac{1}{4}$ inch or less in length. The adults measure: Male, 1 inch; female, $1\frac{1}{8}$ – $1\frac{1}{4}$ inch.

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KING FISH AT CORSON'S INLET, N. J.

There has never been a commercial fishery at this point, but it has long been visited by sportsmen. Among the fish sought *Menticirrhus saxatilis* holds a prominent place. The remarkable variation in numbers of this fish in different years is as noticeable here as at other points, the species occurring in great abundance for one or two years and then gradually decreasing from year to year until few are caught. For the last fifteen years, however, which is as far as reliable accounts go, it has never entirely disappeared.

The year 1907 began the latest period of maximum abundance. During the previous August and September large numbers of young fish, less than two inches long, were seen along the sandy marshes of the Inlet, and many hauls of the bait nets contained little else.

The fish usually makes its appearance early in May, the 4th being the earliest date of which I have a note, and remains until October. In 1909 the last seen were October 11th. After the middle of September a northeast storm is usually followed by their disappearance.

Menticirrhus americanus was first noted by me June 27th, 1909, when 8 examples were found in a catch of 95 king fish. July 26th there were 10 examples in a total of 25 of the two species. They